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THE BIRDS OF THE NOW NON-EXISTENT CAUSEWAY SALT MARSHES, PERTH, W.A.

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Summary

The Causeway mudflats, a tidal marsh area close to Perth, was destroyed by the combined activities of water skiers, council rubbish men and road builders during the period from December, 1963 to 1969. Before this time the area was an important refuge and feeding area for many waterjowl and waders. A brief description of the communities is followed by an analysis of their birds. Counts of species and individuals on a monthly basis furnish the basis of the study.

INTRODUCTION

The area of study consisted of so-called "wasteland" centred around a tidal backwater 22 km inland along the Swan River. Situated only 3 km from the centre of Perth it was thus cut off from all other areas of bushland thereby eliminating some of those bird species that are shy of man's habitations.

The northern side was bounded by the relatively undisturbed waters of the Swan River; the west by Heirisson Island and the six-laned causeway bridges; the southern border was marked by a stand of Flooded Gum (*Eucalyptus rudis*), houses and the Great Eastern Highway; the eastern perimeter was formed by a cement factory and the Perth City Council rubbish dump. The area itself comprised six distinct communities.

THE COMMUNITIES

1. Rubbish Dump. To many in authority the rubbish dump was the obvious fulfilment of such a site so close to the city and so prone to the breeding of the salt-water mosquitoes. This community provided conditions suitable only for Silver Gulls (*Larus novaehollandiae*) and the occasional Raven (*Corvus coronoides*).
- II. Rush Beds. Adjacent to the rubbish dump and running north beside the cement factory and south beside the road to the tip was an extensive series of rush beds. These were broken by open patches of mud and a stand of dead paperbarks (*Melaleuca sp.*).
- III. Salt Flats. The third community constituted virtually the rest of the land above the high tide mark. Abnormal highwater levels did however inundate this section. Such tides occurred when excessive rain fell in the catchment area of the Swan River or when a Spring or Neap Tide coincided with a moderate rainfall. Such flooding occurred only two or three times a year but would last for ten or even more days. The main plant equipped to survive over most of this area was the Beaded Glasswort or Samphire (*Salicornia australis*). However the Marsh Club Rush (*Scirpus maritimus*) and a Glasswort (*Arthrocnemum bidens*) grew in fairly well defined sections of this area. The Glassworts provided three main functions: roosts for the Chats, Pipits and Songlarks; food and protection for numerous insects and camouflage for waterbirds and waders during periods of high tides. This last function was particularly noticeable with the Golden Plovers (*Phivialis dominica*) which rarely seemed to leave the Causeway area during summer. On the south side some of this zone had been turned into rough pasture presenting patches of introduced grasses and the natural plants. White-faced Herons (*Ardea novaehollandiae*) and White Egrets (*Egretta alba*) were often seen stalking frogs and *Gambusia* amongst the plants and along the drains of this community.

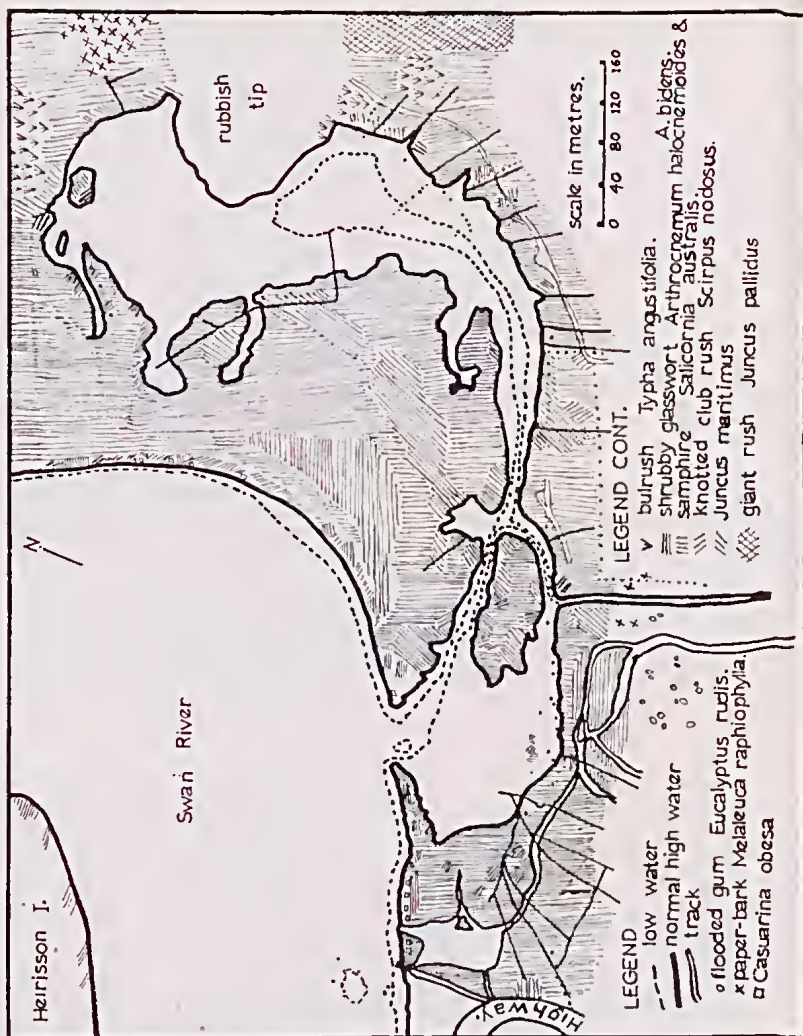


Fig. 1.—The Causeway Salt Marshes as they were in 1961. Dots represent posts, mainly fence posts. Fairly straight lines represent hand-dug drainage channels. The Highway that was built in 1970 passes across the map from the word "Highway" to just above the words "scale in metres". Other plants found in quantities too small to be shown on the map are Pale Goosefoot (*Chenopodium glaucum*), Seablight (*Suaeda australis*) and *Acacia cyanophylla*.

IV. The largest population of birds occurred in the stretch of mud between low and high tide levels and the small amount of water in the inlet during low tide. In effect the area could only be used by birds during medium or low tides. During medium tides ducks were the most noticeable of the avifauna but waders were often abundant. At times the mud in this area was quite firm and could be walked on—but after it had been under water it usually became very soft and one sunk to one's knees in traversing the area. This would deter observers from working this area for regular study.

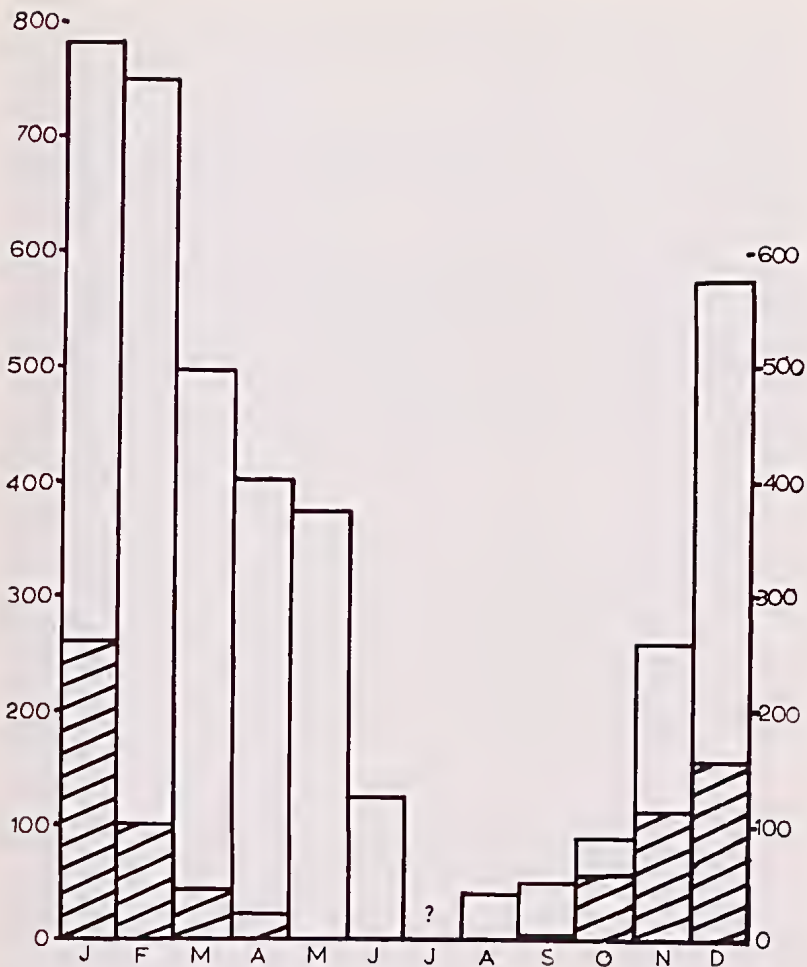


Fig. 2.—Column graph showing monthly means of the number of individual birds in all communities, 1961-65 inclusive. The shaded component shows the proportion and number of migratory waders.

The mud contained many polychaete worms which anglers periodically collected. Small crustacea were also evident. There were no mud whelks as found on other more solid tidal flats of the Swan River Estuary.

- V. This is the sandy beach of the river shore. It is composed of coarse sand and broken shell but in places gives way to mud. The beach zone was and still is bordered by the Shore Rush (*Juncus maritimus*). The birds that made use of this area were the terns, cormorants, gulls and sometimes Red-capped Dotterels. Sheoaks (*Casuarina obesa*) and the Shrubby Glasswort (*Arthrocnemum halocnemoides*) also provided shelter for some of these birds along the flood formed levee banks.
- VI. In the open waters of the river brown algae grew in the deeper parts and here could be found such fauna as Mullet, Blowfish, Gobbleguts, Pipe-fish, Cobbler and School Prawns. The birds that used this area were Cormorants, Pelicans and Coots.

THE DESTRUCTION OF THE COMMUNITIES

The rubbish dump had for some years been slowly encroaching on the rush beds and mud flats. As shown in Figure 1 the dump covered quite a large area by 1961.

The year 1964 saw a marked decrease in the Cormorant and Grebe populations in the river because of the first continued use of the river, immediately above the causeway, by power boats and skiers. This activity commenced in December 1962. The Coots also seemed to be detrimentally affected. They were present in strength in 1962, but only two appeared in the 1963-64 season.

Although the boat club used a ski jump, large modifications to the physical aspects of the environment did not commence until a large fleet of trucks started covering a strip of mud in order to re-route the Great Eastern Highway. They carted the initial sand from where the State Government offices now stand near Kings Park. This was dumped at depths of 6 to 8 feet over the salt marshes in line with the new highway route.

After this the dumping of filling and rubbish accelerated until the whole area was completely altered, a great loss to the bird fauna of the Swan River.

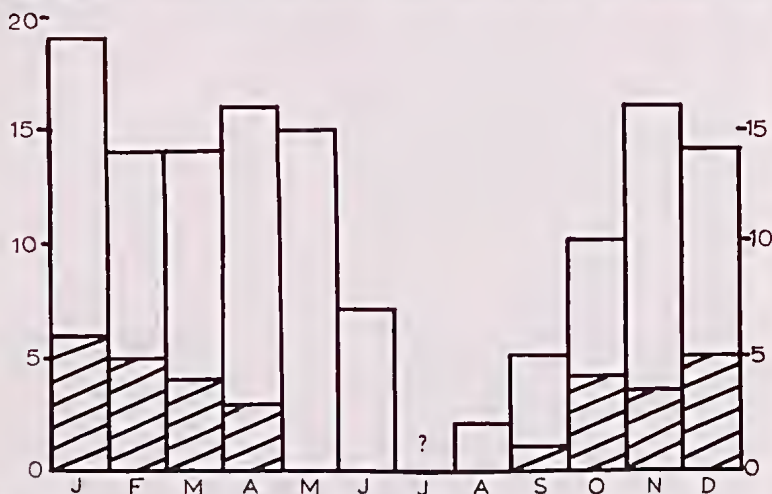


Fig. 3.—Column graph showing monthly means for the number of species present at the Causeway during 1961-1965 inclusive. The shaded component represents the proportion and number made up by migratory waders.

SYSTEMATIC LIST OF SPECIES

Hoary-headed Grebe, *Podiceps poliocephalus*.—Quite often present. The most seen was 15 on 29 April 1962. The area was too tidal for it to breed.

Australian Pelican, *Pelecanus conspicillatus*.—Three to 8 often seen "sailing" in the river or fishing in the backwaters for the schools of fish that occurred there. At times groups of up to 30 (24 December 1961) were seen spiralling in the air currents to great heights.

Black Cormorant, *Phalacrocorax carbo*.—Common but not abundant and rarely seen after the ski club took occupation of the river in December 1963.

Little Black Cormorant, *Phalacrocorax sulcirostris*.—Common but not abundant, except on 9 May 1963 when 70 were seen flying downstream.

Pied Cormorant, *Phalacrocorax varius*.—The least common of the

cormorants and seen only during summer months—apparently liking only salt water.

Little Pied Cormorant, *Phalacrocorax melanoleucos*.—Present mainly during the summer months.

White Egret, *Egretta alba*.—One to 6 often seen in Communities IV and V until the middle of 1963.

White-faced Heron, *Ardea novaehollandiae*.—Nearly always present throughout the year in Communities II, III and IV. The most seen were 31 on 18 February 1965.

White-necked Heron, *Ardea pacifica*.—One only seen, 10 February 1963.

Straw-necked Ibis, *Threskiornis spinicollis*.—Up to 6 were seen in December 1961 and could have constituted a portion of the birds which move down the western edge of the Darling Scarp to the Pinjarra breeding area in the summer.

Blaek Swan, *Cygnus atratus*.—The numbers started falling off during 1963. Birds were most abundant from April to June. For 1962 these were the only months they were seen. Sometimes birds flew in during the day but more often they were heard calling as they flew over nearby Victoria Park during the night.

Mountain Duck, *Tadorna tadornoides*.—One to three were seen at odd times up to February 1963.

Blaek Duck, *Anas superciliosa*.—These birds often mixed with the Grey Teal on the mud-flats of the inlet but were just as often found on the open waters of the river. Before their decline in 1963-1965 groups of up to 35 were fairly common. They seemed to prefer the protection and easy food provided at city parks such as Queen's Gardens, Hyde Park, Shenton Park Lake and Monger's Lake.

Grey Teal, *Anas gibberifrons*.—An abundant bird making particular use of the mud flats. Although up to 240 were seen the bird was rare during winter and spring when presumably it made use of areas normally dry during summer. The bird showed no signs of decline until after February 1965.

Introduced ducks.—The area often contained a Khaki Campbell or a blaek and white escapee.

Blaek-shouldered Kite, *Elanus notatus*.—A single bird seen a number of times in 1962. There were two birds seen in May of the same year.

Swamp Harrier, *Circus approximans*.—A common though brief visitor to the area. If there were no dead birds the individual moved on after half an hour or so.

Brown Falcon, *Falco berigora*.—An occasional visitor.

Nankeen Kestrel, *Falco cenchroides*.—A fairly regular predator in this area.

Little Falcon, *Falco longipennis*.—Two seen on nearby Heirisson Island.

Quail.—A large quail was noticed dead in the *Salicornia* in 1962, but the corpse was missing when I went to collect it.

Western Swamphen, *Porphyrio porphyrio*.—One or two occasionally seen in Community II.

Coot, *Fulica atra*.—The middle of March 1962 saw an influx of birds onto the open water immediately above the southern arch of the causeway. By May some were penetrating the inlet but most dived for the brown weeds of the river. The numbers steadily rose until about 10 June when I counted 180 birds. In the following year two birds were seen—the last my records show.

Banded Plover, *Zonifer tricolor*.—Small groups fly over more often than land in the area. They prefer the grassed areas of Langley Park, Heirisson Island and the old Maylands airport.

Grey Plover, *Pluvialis squatarola*.—Not common, only seen on nine occasions when one to ten individuals were present.

Eastern Golden Plover, *Pluvialis dominica*.—It is interesting that although this plover is much less plentiful in south-western Australia than the Grey Plover (vide Serventy and Whittell) it was more common at

the Causeway. It was seen in groups of 3 to 60 on 31 occasions. Only seen between September and April. Birds were seen in both these months in 1962; the year when I saw quite a few hundred waders leave the Swan River Estuary and fly north over Kings Park on 21 April. Not quite four months later (13 September) some of the 7 Golden Plovers seen at the Causeway were still in breeding plumage. Of course these birds may not have been in the group that left on 21 April. Since the area's habitats have been destroyed I have seen 8 on nearby Heirisson Island (1967).

Black-fronted Dotterel, *Charadrius melanops*.—Two or three seen several times during April and May of 1962.

Red-capped Dotterel, *Charadrius ruficapillus*.—A common bird but I never saw it during winter. Numbers varied between one and 150 on 35 visits, giving a mean count of 35 birds.

Eastern Curlew, *Numenius madagascariensis*.—One or two recorded on 18 occasions between September and March.

Little Whimbrel, *Numenius minutus*.—One seen on 20 December 1964.

Bar-tailed Godwit, *Limosa lapponica*.—Four seen twice during October 1962.

Common Sandpiper, *Tringa hypoleucos*.—One or two seen occasionally—but seen more often on the stone wall around Heirisson Island.

Greenshank, *Tringa ochularia*.—One to four regularly seen. From my observations this bird would seem to leave and return later than the other migratory waders (early May and late October).

Curlew Sandpiper, *Erolia ferruginea*.—This was a fairly common resident of the muddy areas during summer. Numbers varied from one to 75.

Little Stint, *Erolia ruficollis*.—Although the most common of the migratory waders in Australia, the largest number seen in this area at any one time was only 130. There was a mean of 41 over 28 of my visits. This is small when compared with the 4,000 that I have seen at another part of the Swan River.

Sharp-tailed Sandpiper, *Erolia acuminata*.—This was the most common migratory wader at the Causeway. It was present on 27 of my visits with an average of 74 birds and a range of four to 350.

White-headed Stilt, *Himantopus himantopus*.—Groups of one to 40 fairly common.

Avocet, *Recurvirostra novaehollandiae*.—Their numbers reached a peak each summer, 260 were the most birds ever seen. Over 37 trips the mean number observed was 68.

Silver Gull, *Larus novaehollandiae*.—In consequence of the rubbish tip having been started before I commenced this study this species was present in every month of the year; 650 birds was the maximum counted.

Caspian Tern, *Hydroprogne caspia*.—One to 7 birds seen fishing in the river or resting on the sandy beach.

Crested Tern, *Sterna bergii*.—About as common as the Caspian Tern; 9 being the most seen.

Fairy Tern, *Sterna nereis*.—This species was not nearly as common as on other parts of the Swan River. Two only seen twice in 1963.

Welcome Swallow, *Hirundo neoxena*.—Small numbers seen each year during the December to March period.

Australian Tree Martin, *Petrochelidon nigricans*.—More common than the swallow. The only months when it was not seen were October and November.

Australian Pipit, *Anthus novaeseelandiae*.—A common inhabitant of the area; found nesting during August on Heirisson Island.

Brown Songlark, *Cinclorhamphus cruralis*.—Up to 4 were seen during 1962-63 (December, January, June).

Little Grass-bird, *Megalurus gramincus*.—Up to 6 recorded in the Giant-Rush beds of Community 11. This area was ideal for rush birds and although I never heard the Reed Warbler I am sure it must have been there in the earlier years.

Blue-and-White Wren, *Mahurus leucotus*.—I have seen up to 6 including at times a fully plumaged male. These sightings were made on

Heirisson Island during 1962-63. This is their southernmost known limit (vide Serventy and Whittell).

White-fronted Chat, *Epthianra albifrons*.—Found only in the warmer months. The range being one to 20 though I have seen 40 on Heirisson Island.

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BIRDS OF THE GIBB ROCK AREA

By E. H. SEDGWICK

Summary

An annotated list of 89 species identified at Gibb Rock 309 km just south of east of Perth, between 1966 and 1973, with more detailed notes on the effects of progressive farm development on the status of particular species as the originally virgin sandplain-mallee habitat becomes modified.

GENERAL DESCRIPTION OF AREA UNDER CONSIDERATION:

Gibb Rock is 61 kilometres E.S.E. of Narembcen and 32 kilometres N.N.E. of Hyden.

Just south of Gibb Rock is 'Sedgmoor', Location 2672, the property in which the writer is interested. This was acquired and has been developed by Malcolm C. Sedgwick (M.C.S.). It was in a primitive state—typical sandplain-mallee country. A shed was built and clearing commenced in late 1966 and 200 hectares of crop put in in May, 1967. The first dam was put down in 1969, but remained dry until filled by summer rains in February, 1970. At the time of writing, 810 hectares—nearly half of the property—have been cleared and cultivated.

An unusual feature of the farm is a natural soak, almost circular and 1.3 hectares in area. As this soak at times provides almost a hectare of open water, it is probable that the original avifauna included water-frequenting birds of several species which would not have occurred if the soak had not been there.

Landmarks mentioned are: The Humps, 17 kilometres S.S.W., Wave Rock, 29 kilometres in the same direction; Holleton, 27 kilometres N. and Mount Walker, 27 kilometres W.N.W.

NATURAL VEGETATION OF MAIN STUDY AREA:

Vegetation is of the mallee-scrub-plain type. Salmon Gum (*Eucalyptus salmonophloia*) and Wandoo (*Enc. wandoo*) occur very sparingly and there are thickets of Gimlet (*Enc. salnbris*). Mallee forms, occurring mainly in loose, scattered, clumps, are Tall Sandplain Mallee (*Enc. eremophila*, Lerp Mallee (*Enc. incrassata*), Oldfield's Mallee (*Enc. oldfieldi*) and Morrel (*Enc. longicornis*).

Casuarina acutivalvis, locally known as Wodjil, dominates considerable areas in which mallecs do not occur. Shrubs of the Family Myrtaceae form another dominant element.

Other plants occurring in the area are: *Acacia graffiana*, *A. merrallii*, *A. multispicata*, *Exocarpos aphyllus*, *Grevillea hookeriana*, *G. shuttleworthiana*, *Hakea coriacea*, *H. falcata*, *H. platysperma*, *Comesperma volubile*, *Dryandra* (sp.), *Astartea heteranthera*, *Thryptomene kochii*, *Micromyrtus imbricata*, *Chamaelaucium megalopetalum*, *Verticordia acerosa*, *V. chrysantha*, *V. insignis*, *Calytrix ?brachyphylla*, *Beaufortia micrantha*, *Mirbelia floribunda*, *Hibbertia exasperata*, *Leucopogon woodsii*, *L. dielsianus*, *Brachylosum concolor*, *Eremophila drummondii*, *Phebalium filifolia*, *P. tuberosum* var. *tuberosum*, *Synaphea* (sp.), *Drummondita hassellii*, *Pimelea angustifolia*, *P. sylvestris*, *Olearia muelleri*, *Dampiera wellsiya*, *Leschenaultia formosa*, *Drosera macrantha*, *Caladenia cairnsiana*, *C. roei*, *C. saccharata*, *C. filamentosa*, *Pterostylis vittata*.

This list is not exhaustive, of course. Specimens of plants, in blossom where possible, were collected from the area being cleared, as opportunity offered, in a largely random manner.